Abstract

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Title of diploma thesis: **Effect of valencene on adhesion of breast cancer cell line MDA-MB-231**

Valencene belongs to sesquiterpenes and is constituent of essential oils of many plants. It is the main citrus flavoring component. Valencene is mainly used in the food and cosmetic industries, but recent studies have confirmed its biological activity. Its antitumor, antiinflammatory, antioxidant and antiallergic effects have been already proven.

The objective of this study was to determine the cytotoxic effect and influence on the adhesion of sesquiterpene valencene on breast cancer cell line MDA-MB-231. Another objective was to study the mechanism of its effect from the perspective of the selected adhesion molecules, which have an important role in tumorigenesis and metastasis.

Valencene´s cytotoxic effect was tested with use of neutral red (NRU test). Valencene influence on cell adhesion was continuously monitored by means of the X-Celligence device and expression of selected adhesion molecules was studied by Western blot and qPCR methods.

The results showed a slight cytotoxic effect of valencene. Cell viability was over 70% at a concentration of 100 μg/ml. Cell adhesion, which was increased by the addition of TNF-α („tumor necrosis factor-α“), has been reduced below the level of control. Valencene increased gene expression of β-catenin in combination with TNF-α and caused elevation of gene expression of the transcription factor NF-κB.